

dependent upon the state of the factual record, and left by Congress to the Commission. Incorporation of the legal requirements of the essential facilities doctrine will not assist in resolution of this policy question.

3. The Act's Legislative History Confirms That Congress Did Not Intend to Adopt an "Essential Facilities" Standard.

[22] The Act's legislative history further shows that Congress was aware of the "essential facilities" standard but nevertheless intended to adopt a broader standard. When Congress enacted the 1996 Act, it had been well aware of the essential facilities doctrine and that incumbent carriers controlled certain essential facilities. For example, in 1992, James F. Rill, Assistant Attorney General for the Antitrust Division of the Department of Justice, explained the doctrine to a congressional subcommittee evaluating telecommunications reform. Competition Policy in the Telecommunications Industry: A Comprehensive Approach (Part 3): Hearing Before the Subcommittee on Economic and Commercial Law of the Committee on the Judiciary, 102d Cong. 261-62(1992), reprinted at A&P Telecom Hearings (25C), *261-62. Even before then, in 1991, the Senate had considered telecommunications legislation that expressly referred to "essential facilities." See 137 Cong. Rec. S7054, S7058 (daily ed. June 5, 1991) (reading S. 1200, 102d Cong. § 202 (1991)).

Despite its awareness of the essential facilities doctrine, and its prior consideration of legislation using the "essential facilities" term, Congress did not incorporate the essential facilities doctrine into the 1996 Act. Had Congress wanted to adopt an "essential facilities" standard it could have done so expressly, as it had previously considered. Instead, Congress adopted a more expansive standard, rejecting the essential facilities doctrine. This broader approach was expressly recognized by a member of the House of Representatives in a debate on H.R. 3636, 103d Cong. (1994), an early version of telecommunications legislation that

representative noted that the interconnection and unbundling requirements under H.R. 3636 were not restricted to essential facilities. 140 Cong. Rec. H5216, H5243 (daily ed. June 28, 1994).

That Congress did not intend to adopt anything like the essential facilities standard is further illustrated by the language that it rejected. One draft of the Act, reviewed by the Senate, provided that its requirements apply only to incumbents with “market power,” as determined by the Commission. S. 652, 104th Cong. § 101 (1995) as, passed by the Senate reprinted in 141 Cong. Rec. H9954, H9956 (daily ed. Oct. 12, 1995) (draft of Section 251(a)(1)); see also S. Rep. 104-23, at 19 (1995). That same draft gave the Commission guidance as to the “relevant market” to be considered in evaluating market power. Id. Neither of those antitrust elements -- ones that might limit the scope of the Act -- was adopted in the 1996 Act. The “market power” and “relevant market” language was not included in the version of the bill passed by the House of Representatives. See H.R. 1555, 104th Cong. § 101 (Oct. 12, 1995) as passed by the House as amendment to S. 652, reprinted in 141 Cong. Rec. H9978, H9979.

In summary, Congress was aware of the essential facilities doctrine, chose not to refer to the doctrine, and chose not to incorporate elements of an essential facilities case into the Act. Congress plainly intended that a standard other than “essential facilities” apply to the Act’s unbundling requirements.

4. The Commission Should Not Adopt the Essential Facilities Doctrine as the Standard for Determining the Network Elements to Be Provided Under Sections 251(c)(3) and 251(d)(2).

It took more than ten years of litigation and multiple lawsuits under the Sherman Act before the market for long distance service became truly competitive. In supplementing antitrust laws with the 1996 Act, Congress sought to bring about competition in local markets faster than competition came to the long distance market. Applying the essential facilities doctrine as a

means of interpreting the “necessary” and “impair” language of § 251(d)(2) and implementing § 251(c)(3) would negate Congress’ effort in this regard.

The 1996 Act defines circumstances in which ILECs must deal with their competitors. As described above, those circumstances are different than the circumstances that a plaintiff must prove to invoke the essential facilities doctrine or other antitrust laws. Congress plainly intended the unbundling requirements of the Act to exceed the requirements of the “essential facilities” doctrine. There is no basis for using all or part of the essential facilities doctrine which is used to determine liability under the anti-trust laws to determine which network elements should be unbundled under the Act, an entirely different undertaking. Accordingly, if the Commission were to use the essential facilities doctrine as the standard under Section 251(d)(2), entrants would face burdens not contemplated by Congress, slowing down even further the emergence of meaningful competition in local exchange markets.

III. INDIVIDUAL NETWORK ELEMENTS

A. Introduction

To understand why competitors need access to the ILECs facilities, it is necessary to take into account the underlying scale, connectivity, technical, and uncertainty dynamics currently at play in local telecommunications markets.

The telecommunications industry is characterized by economies of scale and density that result in substantially lower costs for some elements when market penetration is great than when it is small. The extent of these economies will vary from UNE to UNE (depending, for example, on whether the UNE has point-to-point or “broadcast” characteristics), and from geographic location to geographic location (depending on traffic or customer density). See Bryant Decl., Tab 3, ¶¶ 6-24 (describing that loop, switching and transport UNEs are each subject to

economies of scale). These underlying economies will determine whether or not there is potential for a CLEC or third party to economically provide the UNE.

Equally important is the network architecture legacy of a century of government-sanctioned monopoly provision of local telecommunications services. The ILEC networks were not configured with multiple providers in mind. The architecture chosen was intended to efficiently interconnect ILEC network elements, with no concern given to — and indeed hostility toward — the interconnection of non-ILEC network elements to the ILEC network. This monopoly legacy affects both the physical configuration of the ILEC network and also the operations support systems needed to pre-order, order, provision, maintain and repair, and bill local telecommunications services. As a result, there are economies of connectivity associated with use of unbundled ILEC network elements in combination that are not available when using non-ILEC elements combined with ILEC elements.

Thus, when analyzing whether a CLEC can utilize an unbundled element provided by an alternative source without being impaired in its ability, offer local telecommunications service, it is not sufficient to look only at the underlying scale-related costs of the element in isolation. It also is necessary to evaluate costs of additional equipment or manual labor needed to connect that element to the ILEC network, delays due to interconnection difficulties, difficulties in coordinating interconnection to meet customer cut-over needs, inability to provision the commercial quantities generated by product launches, and possible quality degradation. For example, although there may be places in which the underlying scale economies in the abstract support using a non-ILEC switch, the additional costs associated with concentrating and moving traffic to the switch, the inability of the ILEC to timely provision commercial quantities of loops due to the need for manual provisioning, or the lack of automated OSS functionality, may render it infeasible for the CLEC to deploy its own switch.

The ILEC network architecture was configured for a single monopoly provider. ILECs have approximately 23,000 switches at which their loops terminate. The CLECs are employing forward-looking networks that, given such advances as fiber technology, will require far fewer switches. But CLECs who deploy their own switches still must get their customers' traffic from the loops that terminate at those ILEC switches to the CLEC switches. This will require a transport link that the ILECs do not need to provide voice-grade local service. The competitive impact of this need for an additional link will be minimized if that link can be provided in the most efficient fashion possible. While the ILEC does not use loop and transport in combination to provide local service, but it does utilize such a combination both when it provides access service for interexchange carriers, and when it provides DSL services utilizing a distant packet switch. ILECs have developed all the OSS required to efficiently provision that combination for carrier access. Because both loops and transport are characterized by significant economies of scale, CLECs are impaired if they are not able to obtain these elements from the ILEC. The most efficient way to obtain these elements is in combination, taking advantage of the efficient provisioning system already developed for their use in a combination for carrier access. If CLECs must have access to these elements or their ability to provide local service using their own elements would be impaired by connectivity problems. ILECs should provide access to network elements in combination when ILECs are providing such combinations to any carrier for use.

Another dynamic factor at play is the technological change that is fundamentally expanding the capability of the existing public switched telephone network and shifting the place at which functionality does or can occur within the local telecommunications network.^{29/} The

^{29/} Thus, next generation digital loop carrier (NGDLC) systems are replacing older digital loop carrier systems, both of which are replacing the "home run" copper; already 20 percent of

once-familiar demarcation points between the loop, the switch, and transport no longer correspond to the realities of the most current network architecture. Limiting CLECs to access through the traditional demarcation points will undermine the CLECs' ability to connect their own elements, or to use the ILEC elements, efficiently. Element definitions must not constrain the increasingly flexible network topology; they should maximize the ability of CLECs to interconnect their network elements to the ILEC elements.

A related technological dynamic is the convergence of voice and advanced services, and the need to configure networks that most efficiently handle both voice and data traffic. This requires a melding of voice and data network elements and creates the need for new points of demarcation and new network elements.

These technological changes have several important implications. First, existing networks are increasingly an amalgam of different technologies. For example, the loop plant from any particular central office could consist of a variety of technologies. Any given central office could have loops of "home run" copper (copper all the way from the customer premise to the ILEC end office), universal digital loop carrier (UDLC), integrated digital loop carrier (IDLC), or, the most current technology, next generation digital loop carrier (NGDLC). The feeder portion of these loops may use copper or fiber. Therefore, a definition of UNEs in terms of existing technologies is inherently unstable; increasingly, definitions must be in terms of functionalities. Definitions in non-functional terms will thus increase the workload of regulatory

all access lines are DLC, and that share is expected to ultimately increase to 50 percent in urban areas and to 80 percent in rural areas. See Bellcore GR-303 Integrated Access Symposium, San Diego, CA. (July 29-30, 1998), www.bellcore.com/gr/gr303.html#forum. Digital subscriber line access multiplexers (DSLAMs) can be installed to provide high speed (broadband) service over copper facilities. Packet switches are being installed in greater numbers to handle the exponential growth of data traffic. Finally, the capacity of fiber optic systems grows significantly with each advance in electronics.

agencies and require greater and more continuous regulatory intervention in interconnection issues.

Second, many of these new technologies have new capabilities that, if not impeded, will make it easier for CLECs to interconnect their self-provisioned elements to the ILEC network. They provide an opportunity for reducing the current disadvantage CLECs face with respect to economies of connectivity, thereby fostering competitive entry. In turn, local competition and the construction of new networks will accelerate the evolution from a single carrier environment to a multi-carrier environment. For example, NGDLC is designed to be able to “multi-host” the DLC equipment to different switches. DSLAMs are being developed to “multi-port” to different packet switches.

Third, as a result of technological change, more and more network facilities are being shared by multiple carriers. Transport is an example of a network element that has long been shared. Switching as well can be and, on a limited basis, is being shared. More and more of the loop plant can be used by more than one provider at the same time. For example, in NGDLC systems, the feeder part of the loop plant from the remote terminal in the field to the central office is not dedicated to one particular customer, but rather the capacity on that feeder is allocated dynamically to fit the needs of the system. Even copper loops can now be shared by voice and data providers through use of DSL technology. As a result, it is no longer appropriate to define UNEs under the assumption that specific equipment and facilities are necessarily dedicated to one particular customer. The ability of CLECs to compete would be impaired if they cannot use the same economies resulting from sharing that ILECs can realize when they provide multiple services, or services to multiple customers, over the same facilities.

A final dynamic is the “uncertainty” dynamic. There has been very limited CLEC entry to date in part because of an uncertain regulatory environment. CLECs do not know what UNEs

are (and will be) available to them, under what terms, conditions, and rates. Therefore, they have a very difficult time constructing business plans to support product launch. See Levine/McMurtrie Decl., Tab 1, ¶¶ 3-6, 9. That uncertainty is especially pernicious when it is built into the regulatory framework through giving the ILECs the discretion to challenge each and every CLEC request for access to a UNE. MCI WorldCom has been forced to respond by focusing its business market launches on end-to-end provision of service on our own network, which minimizes uncertainty associated with the actions of the ILECs (our dominant competitors) or of future regulatory decisions. See id., ¶¶ 10-11. But the regulatory uncertainty (along with other factors) generally has prevented MCI WorldCom from offering local service where it is infeasible to deploy our own facilities, which has dramatically affected our ability to provide service to residential customers. See id., ¶¶ 4, 16-20.

Taking into account these dynamics, there are several different reasons why a CLEC will need access to ILEC UNEs, and why they should be made available on a uniform, nationwide basis. First, there are some ILEC elements to which CLECs will always need access, even if they were pure facilities-based service providers, just to complete calls to ILEC customers. These include access to ILEC signaling systems and call-related databases, to ILEC bulk directory assistance databases, and to ILEC OSS.

Second, there are elements, such as loops and most transport links, whose underlying costs exhibit substantial scale economies that will place new entrants without access to the element at an overwhelming competitive disadvantage, using foreseeable technologies.

Third, there are elements with substantial, but not preclusive, economies of scale, such as switching, that nonetheless currently cannot be used in conjunction with other elements as efficiently when supplied by the CLEC as when supplied by the ILEC — that is, elements for which there are reduced economies of connectivity when provisioned by a non-ILEC.

Finally, there are some elements (such as transport) for which alternative sources generally are not available, but for which at some unique locations (due to location-specific characteristics, such as a location where interchange carriers already have concentrated much traffic) alternative sources can be profitably utilized by the CLEC. If a rule on UNE access could be constructed that could distinguish these unique locations from the more prevalent ones without creating delays or uncertainty about the availability of UNEs that impairs the ability of CLECs to construct business plans and undertake product launches, a CLEC would not be impaired if denied access. But any rule that would allow ILECs to tie up UNE access in litigation in the vast majority of applications in which the CLECs need the ILEC element will only impair, not foster, CLEC provision of local telecommunications service.

With these underlying market dynamics firmly in mind, in the following sections, MCI WorldCom identifies and defines those unbundled ILEC network elements to which CLECs need access in order not to be impaired in their ability to offer local service.

B. Loops and Loop-Related Elements

For the overwhelming majority of customers, the underlying scale economies associated with the loop render it a natural monopoly. See Bryant Decl., Tab 3, ¶ 6. As to all but a tiny fraction of customers, it is economically infeasible (and would represent inefficient use of society's resources) for new entrants to build out an additional line to the customer's premise. See id. ¶ 9. The loop is the single most expensive and time-consuming element in local networks for CLECs to duplicate on a pervasive scale. See id. ¶ 6 (the loop comprises 44% of the total investment by ILECs in their network). Nor are there alternative sources of loops available on a commercial wholesale basis. CLECs need access to unbundled loops to reach their customers of both traditional and advanced services. The lack of access to ILEC loops would not simply "impair" the ability of CLECs to provide telecommunications services; it

would foreclose entirely their ability to reach broad categories of residential and small business customers, as well as many locations of large businesses with multiple locations.

No part of the loop is proprietary to the ILEC. As a result, the “necessary” standard of § 251(d)(2)(A) does not apply, though access to loops clearly is essential for CLECs to offer local telecommunications services. That is why Congress included access to unbundled the loops as a checklist item in § 271 of the Act, and why the legislative history of the Act identifies the loop as an example of a UNE. None of the factors that required this conclusion in 1996 has changed materially in the last three years.

The significant public policy issue confronting the Commission is not whether ILECs must provide unbundled loops to CLECs, but rather how to define these loop facilities that must be made available pursuant to § 251(c)(3).

Given the loop’s continuing natural monopoly characteristics, CLECs cannot successfully enter the local market unless they can efficiently interconnect to the ILEC’s loops — using their own network elements, the ILEC’s UNE platform, or an ILEC packet switch in the case of xDSL circuits. They must be afforded the flexibility they need to connect to the ILEC’s loops so they can choose the technology and network configuration that minimizes the cost differential between connecting those loops to their own switches as compared to connecting them to ILEC switches. Wimmer Decl., Tab 4, ¶ 3.

A loop is no longer only end to end copper from the customer premises to the ILEC end office. Quite often it consists of various components. More than 20 percent of all loops use Digital Loop Carrier technology, and that percentage will only increase over time with further deployment of DLC. *Id.* ¶ 4. Copper wire runs from the customer premises to a DLC at a remote terminal, where the traffic from multiple loops is concentrated and, when NGDLC is used, an individual customer’s traffic is no longer transported on its own channel, but rather is

transported over shared channels. In addition, the capability of the loop is largely dependent upon the electronic components attached to it. Id. ¶ 4. Market forces punish CLECs if they are unable to choose those loop components they need to efficiently provide local services. These electronics must be made available to CLECs either as stand-alone elements or sub-element, and also as an integral part of a loop.

These dynamic market developments can best be addressed by a functional loop definition that can accommodate, but does not embed within itself, the different technologies used to connect the customer premises to the local network. MCI WorldCom proposes modification of the initial definition to more explicitly reflect the various places at which access to the loop can take place. MCI WorldCom suggests definitions and rules that cover the following:

The loop is the means of transmission between a customer demarcation point and a loop access point, including whatever cross connections are needed to join the loop to the next network element, and including at the CLEC's option all loop electronics that support transmission, including, but not limited to, DSLAMs, other multiplexing, and digital loop carrier systems. At the CLEC's option, the loop may be identified in any appropriate manner, including but not limited to identification by its physical components or by the transmission bandwidth need by the CLEC.

The "customer demarcation point" is that physical or logical point at which the customer's network or wiring, and the ILEC's network meet, which may be at the network interface device, or may be at some point between the "intrabuilding network cable" and the customer-maintained and owned wiring.

The "loop access point" is the point at which the loop is connected to other network elements, and the CLEC may identify any of the following as a loop access point:

**NID;
Remote terminal;
Central office main distribution frame;
Central office digital cross-connect bay;
Central office collocation pot bay or its equivalent;
ILEC packet switch; or**

Any other technically feasible point of connection at which a CLEC needs access or it would be impaired in its ability to offer local service.

This definition is similar to the definition in the initial Section 319 and in the Local Competition Order in that it does not attempt to define the underlying technology that is used to provide the necessary transmission. Any such definition would be overly complex and would quickly become obsolete as new technologies are developed. In any event, the technology the ILEC uses to provide the requested transmission frequently is not relevant, so long as it is made available on a nondiscriminatory basis and meets the CLEC's order specifications. Instead, as in the earlier definition, the Commission should require the CLEC to specify only the point at which the CLEC gets access to the loop. The proposed definition differs from the earlier definition in that it fully accommodates the variety of loops currently in the ILECs' loop plant, and makes clear that loop electronics are part of the loop element. Additionally, the proposed definition provides more guidance concerning the places at which CLECs may combine other elements to the ILEC's loops, as efficient interconnection is critical to the CLECs' ability to use ILEC loops.

The customer demarcation point is the physical or logical point at which the customer's network (or wiring) and the ILEC's network meet. Wimmer Decl., Tab 4, ¶ 5. In single family houses and some other cases, that customer demarcation point is at the NID — a cross-connect device used to connect loop facilities to inside wiring — that typically is located at a “minimum point of presence” on a customer's property, in a jack in a box on the outside of the house or a punch-down block inside a business premises. In multi-tenant office and apartment buildings (and in commercial or school campus situations), in which about one-third of all loops terminate, however, there typically also is premises wiring that is owned or controlled by the ILEC that

runs between the NID and the customer demarcation point. Id.^{30/} This wiring on the customer premises is classified in the ILECs' books as "intrabuilding network cable" and carries an outside plant accounting classification. Id. ¶ 5; 47 C.F.R. § 32.2426. It is not the "inside wire" that has been deregulated for 15 years. Rather, it is what has been known in the industry as "house and riser cable" and "interbuilding campus wiring." Wimmer Decl., Tab 4, ¶ 5.

CLECs must have access to the NID and to intrabuilding network cable. These should be treated as components of the loop.^{31/} While NIDs are available from manufacturers at a reasonable price, it is extremely unlikely that it would be viable for CLECs to deploy their own NIDs when they use ILEC UNE loops. Although the cost of the NID is small in absolute terms and NIDS are available from multiple sources, the cost of installing a NID is usually prohibitive. When a CLEC is leasing an unbundled ILEC loop, it would be prohibitively expensive for it to dispatch technicians to each and every customer location to install a new NID, and it would be wasteful to impose on new entrants the costs both of disconnecting loops and NIDs that are normally combined in ILEC networks and of installing new and unnecessary NIDs. Id. ¶ 6; see Iowa Utils. Bd., 119 S. Ct. at 729 (discussing § 51.315(b)).

Further, it often is infeasible for CLECs to replicate intrabuilding network cable in multi-tenant buildings or on campuses. Even if it were economically feasible to do so, and space existed in the ducts, landlords rarely will agree to provide the necessary access because of the disruption associated with installing redundant parallel cable pairs. CLECs therefore need access to that intrabuilding network cable to be able to provide telecommunications services to customers in those locations. Wimmer Decl., Tab 4, ¶ 7.

^{30/} The functionality of the demarcation point is defined in 47 C.F.R. § 68.

^{31/} Alternatively, they can be treated as separate unbundled network elements.

The other end of the loop is identified in the definition as the loop access point. In ordering the loop, the CLEC would be impaired unless it can choose among multiple potential loop access points. CLECs will need to gain access to loops by various means, since the most efficient way to connect to these loops will depend on the nature of the ILEC network, the nature of the CLEC network, the use to which the CLEC will put the loop, and any technical limitations inherent in the loop technology.

Generically, the loop access point is the point at which the loop is connected to other network elements, connected to a CLEC network, or connected to a CLEC collocation. Id. ¶ 8. The loop includes the cross connection needed to join the loop to the next network elements, whether that element is provided by the CLEC, by the ILEC, or by a third party. There are many potential loop access points, each of which should be identified in a rule. For example:

- Loop Access Point at the NID: When a CLEC is providing its own loops to a multi-tenant building or a campus in which the intrabuilding network cable is owned or controlled by the ILEC, the CLEC will gain access to the multi-tenant building or campus at the NID, but will need access to the ILEC loop components that run from the NID to individual customer demarcation points on the far side of the intrabuilding network cable. Id. ¶ 8.
- Loop access point at the remote terminal: A CLEC may choose to serve an area by building its own facilities to loop aggregation points like remote terminals. In this case, the CLEC would need access to the (typically copper) loop extending from the remote terminal to the customer and to the NID. Depending on the CLEC's expected market penetration and other factors, it also might need access to loop electronics such as a DSLAM, digital multiplexing, or a DLC at a remote terminal. Id. ¶ 9. These loop electronics are all part of the loop transmission facility and should be identified as part of the loop element, as well as being separately available as unbundled network elements at the request of CLECs.
- Loop access point at the central office: Most frequently, the CLEC will request access to all of the loop components in the ILEC central office. Depending on the technologies deployed by the ILEC, the central office termination of the loop could occur in a variety of places:
 - ◆ Loop access point at the main distribution frame: For all-copper loops with no loop electronics, the most likely connection point is at the main distribution frame. This is the configuration explicitly identified in the loop definition in the

initial rule. In some cases, the ILEC and CLEC have agreed to utilize a Point of Termination (POT) bay as the interface point. In such cases, the POT bay would serve as the loop access point. Id. ¶ 10.

- ◆ Loop access at a digital cross connect bay: When the ILEC deploys pair gain or other electronics in the loop and the electronics permit connection to the CLEC without further ILEC handling (e.g., dedicated IDLC, DSLAM, or multiplexing), the loop access point will be at a digital cross connect bay. Again, these connections may be extended to a POT bay if the parties have agreed to utilize POT bays. Id. ¶ 10.
- Loop access point after an ILEC switch: If the loop electronics are shared rather than dedicated to a particular customer, the CLEC often will require ILEC switching in order to gain access to the loop traffic, whether or not it wishes to make use of the ILEC switching as a discrete element. In these cases, the CLEC will not gain effective access to the loop until the customer's signal has been routed through an ILEC switch. Such access typically will occur when the ILEC has deployed IDLC, DSLAMs or remote switch modules between the customer and the central office. Thus, with DSLAMs, it usually is not possible for the CLEC to access its data traffic (i.e., separate its data traffic from other carriers' data traffic) until that traffic has gone through the ILEC's packet switch. Therefore, the access point or a DSL-equipped loop must be after the packet switch. Because packet switches are not yet deployed at every central office, the CLEC will require a loop component (what has traditionally been called interoffice transport) to that packet switch as part of the unbundled loop network element. Generally, the CLEC will need the loop and packet switch as a combination to offer advanced services to end users. Id. ¶ 11.

Finally, to ensure that CLECs are not impaired because they are foreclosed from using new technologies in the future, the rule should state that additional loop access points must be made available upon a showing of technical feasibility and impairment.

When ordering loops, the CLEC would need to specify the desired loop access point. Additionally, given the growing demand for advanced services, it is likely that in the future loops will increasingly be ordered either with a specified bandwidth or capability. For example, MCI WorldCom may want to specify a 2-wire and/or 4-wire DSL capable loop in such a way that it is only length or make-up that determines performance. Id. ¶ 12. The definition should make clear that when ordering CLECs appropriately can identify loops by bandwidth.

Finally, CLECs should be able to specify whether the loop should include electronic loop components, such as DSLAMs. DSLAMs include the modems and data multiplexing required to provide advanced services over existing copper loop plant. DSLAMs, are not exorbitantly expensive; a CLEC can purchase off-the-shelf for about \$8,000 to \$20,000 a DSLAM capable of serving 200 to 300 lines. But that DSLAM must be placed in a collocated space whenever the copper portion of the loop ends. Thus, collocation may be required in the ILEC end office or at a remote terminal. The delay and costs of collocation can be substantial. In many circumstances it is not possible or economically viable for a CLEC to install its own DSLAM because no collocation space is available at the ILEC end office or remote terminal, or because the revenues that would be generated are insufficient to justify the costs of collocation, as well as the costs of purchasing and installing the DSLAM. In rural areas, the density of traffic and revenue opportunity will make it difficult to justify the business costs involved. Unless ILECs are required to make their DSLAMs available as part of the loop, CLECs will be unable to provide ubiquitous DSL service, and notably will not be able to serve most rural areas. Given the low demand that can be expected in rural central offices relative to the capacity and price of DSLAMs, the most efficient use of equipment is to have the CLEC share scale economies by offering DSLAMs to all carriers as a component of the loop. Id. ¶ 13.

The Commission should clearly state that the CLECs may place their own electronics on ILEC loops so long as those electronics do not cause harmful interference with other technologies used in the same transmission facility. Thus, the CLEC should be able to place its own IDLC, DSLAM, remote switch module on multiplex at any feasible point in an ILEC's loop plant and utilize ILEC dark fiber or other transmission media to reach the servicing central office.

In each instance, the loop element includes all structures and drops, stubs, jumpers and other cross-connections necessary to join one loop element to other network elements.

C. Switching

Switching is the function of creating temporary connections between or among loops and transport in order to route voice and data traffic. It is characterized by economies of scale and — affected by economies of connectivity that give ILECs substantial cost and operational advantages over CLECs. As shown in the analysis performed by Dr. Bryant, there are scale economies in switches at every geographic cost zone that favor the incumbents' greater market penetration. Indeed, the number of switches deployed by CLECs in a particular local exchange area is likely to be limited by economies of scale, and this will have effects on other CLEC costs, particularly transport. See Bryant Decl., Tab 3, ¶ 24.

Even if a CLEC can project enough traffic volume to justify deployment of its own switches, it will be feasible for the CLEC to undertake that deployment only if in so doing it is able effectively to utilize ILEC loops in conjunction with its own switches. Unfortunately, under current conditions, CLECs who use their own switches rather than ILEC switches face substantial additional costs and provisioning problems in gaining access to the ILECs' loops that are not faced when the ILEC loop and switch are ordered in combination. Id. ¶ 14.

CLECs must get their customer traffic off the loops that terminate at the ILEC end offices and transport it to their switches. Although there are potentially less expensive ways to concentrate and transport traffic to their switches, currently the most common way to accomplish this is to collocate equipment (e.g., DLC or DSLAMs) at all the ILEC end offices whose traffic will feed into the CLEC switch. In addition, the traffic must be backhauled to the CLEC switch. When these additional costs are added to their underlying scale disadvantages, in many places it is not feasible for CLECs to deploy their own switches. Id. ¶ 15.

In addition to these cost disadvantages, currently there is no electronic provisioning system for the typical end to end copper loop where the ILEC already provides the loop and switch services together. When MCI WorldCom or any other CLEC attempts to connect such ILEC loops to its own switches, a manual cross-connect must be performed at the MDF at the ILEC end office. It is far from clear whether any provisioning system relying on such manual cross-connects could support mass markets competition, in which a competitor would be asking the ILEC to deliver thousands of loops each day. Id. ¶ 16.^{32/} The ILECs themselves never had the need to move so many customers on and off their system so quickly, as their networks, and their customer bases, grew incrementally. In any event, whatever may be theoretically possible, no ILEC has in fact developed the internal processes that would enable them to perform these manual activities in large volume. Id. ¶ 17.

Because as a practical matter competitors need ILEC loops in order to offer mass market services, and because competitors that need ILEC loops in mass market quantities are forced to use ILEC switches as well, the so-called “UNE platform” has become the only facilities-based service entry vehicle capable today of servicing large numbers of residential customers. One critical difference between the UNE platform and an ILEC loop-CLEC switch combination is that the former can be provisioned electronically. The latter cannot. Another critical difference is that the ILEC require competitors to collocate if they wish to use their own switching. The platform does not require collocation. Thus MCI WorldCom has launched a mass market product throughout New York State using Bell Atlantic’s UNE platform. Id. ¶ 18. This is not an abstract proposition. In New York, where the element prices do not make competition

^{32/} In their cost studies the ILECs typically have claimed it takes 30 minutes to perform each cross-connect. At that speed, because the processes are manual it will be a lengthy and difficult process for ILECs to handle the thousands of orders likely to be generated by a CLEC Mass Markets product launch. Id. ¶ 16.

impossible, where the UNE-P platform is available, and where there is at least some working OSS to order and provision the platform, we are in the mass markets business. In a few short months since these pieces have been in place, MCI WorldCom already has in excess of 40,000 residential customers serviced through the platform, with another 20,000 customers expected to be on MCI local service next month. We expect these numbers to grow rapidly. All of this is happening even though Bell Atlantic continues to have problems with its OSS. If and when Bell Atlantic fixes the remaining problems with its OSS, we will be in a position to compete aggressively for a great many more residential customers, and we have every confidence that New York consumers will respond enthusiastically. Id. ¶ 17. MCI WorldCom would not be able to offer that product unless it had access to unbundled local switching, even in Manhattan, which has more CLEC switches than any other location in the country. Id. ¶ 18. And MCI WorldCom cannot currently offer mass market services throughout the country because it has been deprived access to the platform with elements available at cost-based rates.

Because of the substantial obstacles that face a CLEC that wishes to combine the ILEC loop with its own switch, CLECs needing to lease ILEC loops typically also lease the ILEC switch, even when they have deployed their own switches. For example, MCI WorldCom has its own switching in place in Manhattan, but does not use that capability to provide Mass Market service in Manhattan. MCI WorldCom has made that choice because Bell Atlantic is not capable of provisioning loops for CLECs in commercial volumes when CLECs use their own switching. Id. ¶ 19.

Although there are 23,000 ILEC end office voice switches, as of the end of 1998 there were only 579 CLEC voice switches, with 250 more planned for 1999.^{33/} Moreover, since these

^{33/} New Paradigm Resources Group, 1999 CLEC Report, 10th Ed., Author: New York, Chapter 6, p. 14 (Table 7).

totals include all CLEC switches, and since the same market considerations typically lead more than one CLEC to locate a switch in a particular area, a large portion of the totals represent the switches of different CLECs that serve the same geographic areas. For example, there are more than 20 CLEC switches in New York City, most of which serve lower Manhattan.^{34/} The sum of the matter is that the overwhelming majority of ILEC switches provide service to customers who cannot efficiently be served by any competing switch. Requiring CLECs to deploy all the switches needed to provide ubiquitous service in competition with ILECs would significantly delay competition by imposing impossible financial and logistical burdens on the CLECs.

If CLECs are not able to build market share by serving customers with unbundled ILEC switching prior to deploying their own switches, then the business case for deploying a switch may be delayed or undermined altogether. Wimmer Decl., Tab 4, ¶ 19. The same could happen even if switching were identified as a UNE but ILECs were able to challenge — and thus delay — CLEC requests for UNE switching on an end office-by-end office basis. Even if it were financially viable to deploy switches for ubiquitous market coverage, CLECs can only deploy so many switches at a time, and once a decision to deploy is made it still takes 18 to 24 months to provision a Class 5 switch. Herold/Stockhausen/Lathrop Decl., Tab 5, ¶ 6. For all of these reasons, CLECs are impaired without access to unbundled ILEC switching. Congress therefore properly recognized CLECs' need for access to unbundled and switching when it identified switching as a UNE in the legislative history of the Act.^{35/}

As local networks continue to evolve, there is another reason why CLECs will be impaired in their ability to provide local services without access to both local circuit switching

^{34/} New Paradigm Resources Group, 1999 CLEC Report, 10th Ed., Author: New York, Chapter 8, pp. 88-89.

^{35/} S. Rep. No. 104-23 (1995).

and packet switching. ILECs are deploying loop technologies inextricably tied to switching functions. These technologies either significantly improve the quality of local loops or reduce costs by concentrating more customers over fewer access channels. Examples of this trend are remote switch modules and DLC, which improve both transmission and concentration, and DSLAMs, which increase bandwidth. Unless a CLEC has demand sufficient to justify placing its own dedicated device, all three technologies require use of an ILEC switch to gain access to the individual customer after the customer's loop has passed through the device. Wimmer Decl., Tab 4, ¶ 20.^{36/}

As discussed above in the loop section, current local network design pushes loop concentration ever closer to the end user. When the DLC and DSLAM are remotely located with currently deployed technology, a CLEC has no alternative but to use the ILEC switch. While manufacturers are responding to the possible demand for multi-hosted DLC and DSLAMs, that is, loop devices that can subtend multiple switches, such technology is not yet widely deployed. If CLECs are to be permitted to compete for customers that are served by ILECs using these loop technologies, then the CLECs also must have access to ILEC circuit and packet switches. Id. ¶ 21.^{37/}

^{36/} Older versions of DLC were not as integrated into local switching as NGDLC. But the economics of NGDLC are compelling that carriers may choose to deploy it even on all copper loops to minimize the use of (and costs associated with) local switching ports. Id. ¶ 20 n.1.

^{37/} Without access to vertical features, CLECs would be impaired in several ways. They would suffer from inferior access to the switching functionality that the ILECs enjoy, and thus would not be able to provide all the services provided by the ILECs, such as call waiting or caller ID, which many customers view as necessary elements of service offerings. Moreover, restricted or costly access to these vertical features will undermine CLECs' ability to provide unique service packages and pricing plans. Id. ¶ 22.

Similarly, the switching UNE must include the customized routing embedded in the switch that is needed to complete calls — including the customized routing needed to direct a CLEC's customer to that CLEC's operator services and directory assistance platforms.

Finally, in this regard, there are especially compelling incentives for CLECs not to use the ILECs switch whenever it is in a position to use its own. Switching contains much of the intelligence of the network, and when MCI WorldCom can use and maintain control over its own switching it is best able to differentiate its product from the ILECs, and best able to integrate its local and long-distance products. Switching is therefore the one element over which CLECs would most like to have control, and they will avoid reliance on ILEC switching unless truly necessary.

MCI WorldCom believes that the definition of switching contained in the Local Competition Order is essentially sound. We suggest only two changes to the existing rules. First, the rules were written as if switches connected only to home-run copper loops. As discussed earlier, this is not the case. Already 20 percent of all loops utilize DLC, and that proportion will become a majority in the near future. Similarly, distinctions between line-side facilities and trunk-side facilities are becoming less clear. The Commission should amend the technology-specific or architecture-specific references in the existing definition; we provide suggested language below. Second, additional language is needed explicitly to take into account packet switching, which the Commission has already acknowledged should be included within the definition of unbundled local switching.^{38/}

We, therefore, propose that rules for Switching cover the following:.

Otherwise, the CLEC would not be able to provide its customers operator services and DA on its own, and would have to re-brand the ILEC's service. As a corollary, the ILEC must not be allowed to insist upon using an outdated customized routing protocol that would add to the CLECs' costs when more efficient customized routing protocols are available and in use to route calls today. Id. ¶ 22.

^{38/} Memorandum Opinion and Order, and Notice of Proposed Rulemaking, In re Deployment of Wireless Services Offering Advanced Telecommunication Capability, 13 F.C.C.R. 24012 (1998).

- (1) Generic Switching Capability: Switching is the function of creating temporary connections between or among loops and transport in order to route voice, data, or other traffic that flows over the public switched network.**
- (2) Local Circuit Switching Capability**
 - (i) The local circuit switching capability network element is defined to include:**
 - (A) all facilities needed to connect loop access points to the switch facility and to connect transport access points to the switch facility, including, but not limited to, the main distribution frame, switch line cards, line port cards, trunk port cards, and any and all necessary cross-connections.**
 - (B) all features, functions, and capabilities of the switch, including, but not limited to:**
 - (1) the basic switching function of connecting lines to lines, lines to trunks, trunks to lines, and trunks to trunks, as well as the same basic capabilities made available to the ILEC's customers, such as telephone number, white page listings, and dialtone;**
 - (2) all other features that the switch is capable of providing, including but not limited to custom calling, custom local area signaling service features, and Centrex, as well as any technically feasible customize routing functions provided by the switch.**
 - (3) All other routing capabilities including 101xxxx, E911/911/DA/OS and all advanced intelligent network features including call transfer triggers utilized in the same manner as used by the ILEC,^{39/} plus call recording and signaling functions when provided on a local rather than centralized basis.**
 - (ii) An ILEC shall transfer a customer's local service to a competing carrier within a time period no greater than the interval within which the ILEC currently transfers end users between interexchange carriers, if such transfer requires only a change in the ILEC's software;**

^{39/} Many of the AIN capabilities already must be made available to competing enhanced service providers.

- (3) **Tandem Switching Capability:** The tandem switching capability network element is defined as:
- (i) **trunk-connection facilities, including but not limited to the connection between trunk termination at a cross-connect panel and a switch trunk card;**
 - (ii) **the basic switching function of connecting trunks to trunks; and**
 - (iii) **the functions that are centralized in tandem switches (as distinguished from separate end-office switches), including but not limited to call recording, the routing of calls to operator services, and signaling conversion features.**
- (4) **Packet Switching Capability:** The packet switching capability network element is defined as:
- (i) **Packet switching capability: a computer controlled device that routes digital information structured in cells or packets from an input source toward a destination utilizing adaptive routing, dynamic bandwidth and multiple protocols. Most packet switches now use ATM or frame relay packet structures without error detection and correction. Earlier packet switches also incorporated error correction techniques.**

D. Signaling and Call-Related Databases

The concept of a public switched telephone network is that each telephone customer can be connected to every other telephone customer seamlessly, regardless of service provider. Very few calls will travel end-to-end on a CLEC's network. Even a pure facilities-based CLEC has to interconnect with the ILEC to terminate its customers' calls made to ILEC customers. To route and bill calls that do not travel end-to-end on its own network, a CLEC must have access to the ILEC's SS7 signaling networks and call-related databases, including the Advanced Intelligent Network ("AIN") architecture and service management systems; there are no substitutes. Declaration of Bernard Ku ("Ku Decl."), (attached hereto as Tab 6) ¶ 2. Any CLEC denied access to any of these will not merely be impaired in its ability to offer competitive local telecommunications services, it will be precluded from doing so. Id.

In its initial Local Competition Order, the Commission spent more than 50 paragraphs discussing access to signaling systems and databases.^{40/} That discussion is both comprehensive and sound.

Signaling

Signaling links are dedicated bi-directional transmission paths carrying messages between switches and signaling networks. Signaling Link Transport is a set of two or four dedicated 56 kbps transmission paths between CLEC-designated Signaling Points of Interconnection and ILEC Signal Transfer Points ("STPs"). STPs are signaling message switches that interconnect Signaling Links to route signaling messages between switches and call-related databases. STPs also provide access to other network elements connected to the Signaling System 7 ("SS7") network, including: (1) ILEC local or tandem switches, (2) Service Control Points (these are databases, as described below), (3) third party local or tandem switches, and (4) third party-provided Service Control Points/Databases. Id. ¶ 3.

Signaling Links, Signaling Transport, and STPs are essential elements of the SS7 network that are used to control the call processing flow of many different types of calls. CLECs must have the same access to these elements as the ILECs have in order to provide end-to-end service comparable to the ILECs. Interexchange carriers and third parties use these same elements to interconnect their networks. Id. ¶ 4.

CLECs, especially those that use the ILEC's switch to provide local service, have no option but to obtain these signaling elements from the ILEC. This is because the ILECs' switches are directly interconnected only with the ILECs' own signaling networks and cannot interoperate with multiple signaling networks except through their own signaling networks'

^{40/} Local Competition Order ¶¶ 455-459.

mediation. It would be both discriminatory and inefficient to require CLECs to obtain interconnection and access to the call-completion databases through a third party provider, since that third party would have to interconnect in the same fashion as the CLEC. Id. ¶ 5.

Databases

Service Control Points (“SCPs”) are intelligent databases containing customer and/or carrier-specific routing, billing, or service instructions. SCPs are the network elements that provide the functionality for storage of, access to, and manipulation of information required to offer a particular service or capability. Id. ¶ 6. These include the following databases:

- The Line Information Database (“LIDB”) is a transaction-oriented database accessible through the SS7 network that contains records and billing instructions associated with subscriber line numbers and special billing numbers. LIDB accepts and responds to queries originating on ILEC, CLEC, and third party networks.
- The Toll Free Number Database provides the functionality necessary for toll free (800 and 888) number services. The Toll Free Number Database translates dialed numbers into POTS numbers or other network routing information, thereby providing routing instructions to the originating network.
- The Customer Name (“CNAM”) Database contains the customer name associated with a particular telephone number. This database and other databases that store customer information and associate that information with the customer’s telephone number are used to provide Caller ID and related services.
- The Number Portability Database contains network routing instructions for all numbers that have ported from one service provider’s network to another service provider’s network. Access to this information permits any network that queries a Local Number Portability Database to process and deliver a call to the terminating network on which the ported number resides.

These databases are updated either through an ILEC proprietary interface or through a nationally standardized interface, as described in the Commission’s Local Competition Order. Local Competition Order ¶¶ 458, 459.

CLEC access to the AIN databases, ILEC Service Creation Environment, and Service Management System is critical if the CLECs are to develop and deploy new and innovative

services. These services require extensive testing to ensure network interoperability, and the testing cannot be duplicated outside the ILEC SCE environment. Ku Decl., Tab 6, ¶ 8.

In its Local Competition Order, the Commission found that requiring entrants to bear the cost of deploying a fully redundant network architecture, including AIN databases and their application software, would constitute a significant barrier to market entry. Local Competition Order ¶ 489. The Commission concluded that elimination of that barrier created a public policy benefit that outweighed the potential harm of any disincentive for ILECs to develop new and advanced services using AIN if the CLECs were provided access to the ILECs' software applications that reside in the AIN databases. The Commission proposed revisiting this issue in the future when "competition may reduce the incumbent LEC's control over bottleneck facilities and increase the importance of innovation." Id. In the two-and-a-half years since the first order was released, competition has not developed sufficiently to modify the calculus of this public policy tradeoff. The ILECs still enjoy control over bottleneck facilities. Moreover, CLECs continue to have the incentive to develop their own new and advanced services, rather than relying on ILEC services, but their ability to do so would be stifled if they were first required to develop their own AIN capability. Also, ILECs have not demonstrated that they actually have been discouraged from developing unique and innovative AIN-supported services.

Commission rule 51.319(e), based on substantial evidence relating to impairment, required ILECs to provide CLECs unbundled access on parity with the ILECs' access to signaling networks (including, but not limited to, signaling links and signaling transfer points), to call-related databases (including, but not limited to, LIDB, Toll Free Database, downstream number portability databases, and AIN databases), to the information necessary to enter correctly, or format for entry, the information relevant for input into ILEC SMSs, and to design, create, test, and deploy AIN-based services at the SMS, through a service creation environment.

MCI WorldCom proposes maintaining the provisions of this rule with one exception. Rule 51.319(2)(ii) should be modified by adding the Customer Name Database and related databases to the list of databases to which CLECs should have access.

E. Transport

Interoffice transport provides the transmission links among and between both ILEC and CLEC switches. Transport can be dedicated to a single carrier or shared by carriers. Transport is characterized by substantial economies of scale, and competitive transport facilities can at this time only be provided profitably where large traffic volumes can be aggregated and delivered from one point to another, and where distances are not great. See Bryant Decl., Tab 3, ¶¶ 11, 14.

A CLEC's transport needs will depend on whether or not it is using its own switch. If a CLEC is using its own switch, it will need dedicated transport to provide all links between ILEC end offices and the networks of other carriers, including the CLEC's own network.^{41/} If the CLEC uses the ILEC switch (typically as part of the UNE platform), it will need access to shared transport to complete calls in the same fashion as the ILEC does. Wimmer Decl., Tab 4, ¶ 24. As explained below, without access to both shared and dedicated transport, MCI WorldCom's ability to offer ubiquitous competitive local exchange services would necessarily be impaired.

Shared Transport. To provide local service to a customer using ILEC loops and switching (and particularly when using the ILEC UNE platform), unless a CLEC has access to unbundled shared transport, it would have to either build or lease dedicated transport circuits to duplicate the entire ILEC local transport network. The need to duplicate such an extensive network just to begin to offer service would constitute an insuperable barrier to entry. Id. ¶ 25.

^{41/} The Commission's transport rules require that these links be dedicated, not shared. 47 C.F.R. §§ 51.319(d)(1)(i), (ii).

The cost of constructing — or even leasing — dedicated facilities to end offices where a new entrant has few customers is prohibitive. Shared transport permits CLECs to take advantage of some of the ILEC's economies of scale and density. Until CLECs are able to generate sufficient volumes of traffic — and in many locations they may never be able to do so — shared transport is much more efficient than dedicated transport. Id. ¶ 26.

Moreover, there are no competitive alternatives to ILEC shared transport, and there are not likely to be alternatives in the foreseeable future. The ILEC, in its historic position as the monopoly provider of local exchange and exchange access service, has constructed an ubiquitous transport network. It has much better information on the traffic flows (and hence transport needs) of all the carriers in a market than will any other carrier, and also frequently enjoy superior access to rights of way. Moreover, ILECs will not likely want or need to share CLEC facilities, and total CLEC traffic may not be sufficient to justify investment by even one CLEC in a shared facility. For the foreseeable future there are not likely to be alternatives to shared transport. Id. ¶ 27.

Finally, even where there is sufficient demand along a particular route for dedicated transport to be cost effective, shared transport still is necessary for competitors, as it provides the most efficient way to handle peak traffic loads. ILECs themselves optimize their traffic transport by determining the optimal size of their dedicated trunks and sending peak traffic over shared facilities. If CLECs were denied the same access to shared transport for their peak traffic overflow, they would be placed at a significant cost disadvantage that would impair their ability to competitively provide services they seek to offer. Id. ¶ 28.

The Commission has long recognized the need for all carriers to have the same access to shared transport for interexchange competition to develop. The same is true for local competition.

Dedicated Transport. When CLECs deploy their own switches, they need dedicated transport for all links between ILEC end offices and the networks of other carriers, including the CLEC's own network. FCC rules do not allow CLECs to use shared transport for these links. If the CLEC's traffic volume between two ILEC end offices increases sufficiently, CLECs may also find it more efficient to use dedicated rather than shared transport between those ILEC end offices. Id. ¶ 29.

In the vast majority of cases in which competitors might need dedicated transport, the ILEC is the only source for that transport. ILEC claims notwithstanding, there currently are few competitive alternatives for most dedicated transport routes. Alternative providers have focused their investments on one type of link — the “entrance facility” between a CLEC switch and an ILEC end office. However, there are very few alternatives available for the “channel mileage” or “interoffice mileage” link between the ILEC end office and the ILEC end office serving a CLEC customer. Id. ¶ 30.

MCI WorldCom is committed to using alternatives to the ILECs for its transport needs wherever possible. Wherever feasible, MCI WorldCom selects transport from an alternative provider.^{42/} We therefore track very closely the availability of alternative providers. Our records show that we can self-provision transport to just over 400 ILEC end offices, though in many or most of these cases we still require ILEC multiplexing. We also can purchase transport from other CLECs and CAPs to reach approximately 1,200 additional ILEC end offices, again often requiring ILEC multiplexing. Almost a quarter of the CLEC and CAP transport facilities are in the New York, Los Angeles, and Chicago LATAs, but even in these LATAs, alternatives exist for only a minority of ILEC end offices. Wimmer Decl., Tab 4, ¶ 31.

^{42/} See Affidavit of Wayne Rehberger, attached at Appendix B to MCI WorldCom, Inc. comment (filed Oct. 26, 1998) in CC Docket No. 96-262 et al.

There are, then, a few locations in which MCI WorldCom and other CLECs would not be impaired if they were denied access to ILEC transport as an unbundled network element.^{43/}

However, the case against attempting to define these locations in a regulation, or providing for a case-by-case unbundling of transport, is overwhelming. First, as set out above, the record establishes that MCI WorldCom, and no doubt other CLECs, will lease transport from non-ILEC sources whenever it can. Thus, as to transport there is record evidence for what is true generally — there is little need for regulation that protects against unnecessary leasing, and there is no harm in a regulation that is marginally overinclusive.

On the other hand, there would be great harm in a regulation that gave ILECs the right on a case-by-case basis to deny competitors access to their transport at cost-based rates, because they would deny leasing rights in those places in which CLECs need it most. There is no single threshold above which dedicated transport is cost-effective. The threshold level of traffic may vary tremendously between different routes because a multitude of factors besides volume of traffic determines whether it is cost-effective for a CLEC to construct its own transport. For example, the costs may vary enormously depending on whether rights of way are available, how

43/ Of course there are also locations in which CLECs can purchase access service from ILECs as an alternative to leasing unbundled transport from the ILEC, and in a few of these locations the price of the access service (though considerably higher than a cost-based rate for comparable transport), still enables the CLECs to use the service profitably as part of a facilities-based offering. But that is both factually unimportant and legally irrelevant. It has limited factual significance because there are only a very few markets in which CLECs can compete using elements purchased at non-cost based rates. It is legally irrelevant because the statutory question the Commission must answer when it determines whether to unbundle an element is whether the CLEC is impaired if it cannot obtain the element from the ILEC; if the answer to that question is “yes,” it is of no relevance that the CLEC would not be impaired because it can obtain the element from the ILEC, but not as an element, and not at a cost-based rate. Were it otherwise, ILECs could avoid all of the Act’s unbundling and pricing provisions through the simple device of offering as a “service” at a rate that was inflated but not prohibitive (if the rate were too high to permit CLECs to compete profitably, their competitiveness would be impaired) elements which they otherwise would be required to unbundle.

expensive they cost, and how direct they are. Thus a rule that attempted to limit CLEC access to ILEC shared transport to those links that carry less than a specific level of traffic per appropriate unit of time would be too simplistic and subject to disputes that would delay competition.

The ILECs of course are in the best position know where CLECs have chosen alternative providers, because they will not have CLEC business in those locations. They also will know where alternative transport exists, since it will be connected to their networks. When faced with competition, they want CLEC transport business wherever possible. ILECs will not want CLEC transport business, however, if CLECs cannot self-provide or buy transport from another CLEC, because ILECs would rather keep the retail customer and lose the wholesale transport business. All this being so, if ILECs were given the discretion to choose where they will provide cost-based transport, they would have no incentive to deny CLECs service where there are alternatives of equal quality for CLECs to turn to. Wimmer Decl., Tab 4, ¶ 32. Rather, they would choose to deny CLECs transport where CLECs do not have other options. This would be fatal to the prospects for facilities-based competition. As a practical matter, CLECs would be unable to obtain unbundled access to the loops of customers located in the majority of ILEC end offices.

Nor are there likely to be alternative sources for dedicated transport in many of the locations in which there is no dedicated transport today. Even as the public switched network evolves to incorporate the facilities of new entrants as well as incumbents, the location of transport links will be determined largely by the location of incumbent switches, and it will be the incumbent who will be in the best position to provide dedicated transport facilities between these nodes. The incumbent also enjoys historical access to rights of way not always available to others, or not available on equally favorable terms. Accordingly, even if CLECs win enough

traffic to support dedicated transport, they will not necessarily be able to build out their own transport facilities. Id. ¶ 33.

In sum, ILECs should be required to provide CLECs access to their unbundled transport.

The existing definitions of transport have survived much judicial scrutiny and provide sound definitions of the elements the Commission must now decide whether to make available on an unbundled basis. As the existing definitions make clear, transport is the means of transmission between two transport access points. The transmission must carry or be capable of carrying varying degrees of bandwidth, as specified by the CLEC, subject to any technological limitations of the of underlying loop technology.

Transport access points are physical or logical points at which the transmission is connected to a CLEC network or to other ILEC network elements. Transport access points can be at multiplexers (which should be included as part of the transport definition), at digital cross connects, at ports on digital loop carrier systems, or at trunk ports on switches. The CLEC must specify the transport access points when ordering transport.

Transport includes all equipment necessary to carry traffic, including digital loop carrier (when used as part of transport), multiplexing equipment, and fiber optic terminals. Transport must be either capable of carrying specific bandwidth — as in the case of dark fiber — or must actually carry specific bandwidth (for example, DS-1 level transport). The CLEC must specify the bandwidth when ordering transport.

F. Operations Support Systems

Operations Support Systems (“OSS”) consist of all the manual, computerized, and automated systems, together with associated business processes, needed to pre-order, order, provision, maintain and repair, and bill retail or wholesale telecommunications services or unbundled network elements. These systems, and the up-to-date data maintained in them, are

needed by ILECs and CLECs alike to serve customers in a timely, efficient, and accurate fashion. Declaration of John Sivori (“Sivori Decl.”), (attached hereto as Tab 7) ¶ 2.

For years the ILECs have used highly complex automated OSS systems to manage successfully their own internal processes and customer interactions, minimizing the need to undertake manual activities, and thereby substantially reducing both labor costs and the time required to perform a function. These well-tested systems ensure, for example, that ILEC customer service representatives have immediate real-time access to all information necessary to respond fully and correctly to customer queries about such things as the variety and prices of services available, or the status of repair calls. They also ensure, among other things, that ILEC retail customer orders are correctly processed and that bills are timely, complete, and accurate. Id. ¶ 3.

CLECs need access to the ILECs’ OSS, whether they are reselling ILEC products, leasing unbundled elements from the ILECs’ network, or simply interconnecting to the ILECs’ network. As the Commission found in its Local Competition Order, OSS should be unbundled not only as a network element in its own right, but also because it is essential to the provision of all other network elements. Sivori Decl., Tab 7, ¶ 6. CLECs are entitled to access to the ILECs’ OSS under any conceivable “impair” standard.^{44/} The Commission’s finding in its First Report and Order requiring the unbundling of OSS was cited by the Supreme Court as “supported by a higher standard” of the sort that the Court determined was required by the Act. Iowa Utils. Bd., 119 S. Ct. at 736 (citing Local Competition Order ¶¶ 521-522). The Commission “consistently

^{44/} An OSS interface must operate as a shared interface between the more private “back-end” systems of the ILEC, on one side of the interface, and the CLECs on the other side. The interface should meet a uniform industry standard and by its very nature is not proprietary (though even if it were it would inherently meet any conceivable standard of “necessary”). Without industry-standard OSS, CLECs would have to develop separate OSS systems in every state in which they enter a requirement that has proven to be a substantial barrier to entry.

has found that nondiscriminatory access to these systems, databases, and personnel is integral to the ability of competing carriers to enter the local exchange market and compete with the incumbent LEC.” Memorandum Opinion and Order, In re Application of BellSouth Corp., BellSouth Telecommunications, Inc. and Bell South Long Distance, Inc. for Provision of In-region Services in Louisiana, CC Docket 98-121, FCC 98-271, ¶ 83 (rel. Oct. 13, 1998). Indeed, CLECs are entitled to access to OSS not only as a UNE in and of itself but also to make access to other UNEs possible. Sivori Decl., Tab 7, ¶ 6.

Almost all ILEC OSS systems today are inadequate to handle basic CLEC needs. Id. ¶ 4. For example, in most cases CLECs have no access or only inferior access to the ILEC OSS with the pre-ordering information needed at initial customer contact. Thus CLECs cannot give their prospective customers the kind of basic information about services that ILECs routinely provide. This introduces errors, causes delays and uncertainty that both discourage customers from choosing a CLEC and undermine CLEC marketing campaigns, and creates a negative image for customers, all of which inflate CLECs’ customer acquisition costs. Even where ILECs have adequate OSS in place, they typically have chosen to deploy proprietary systems rather than follow industry standards, thus imposing millions of dollars in up-front costs in each region on national CLECs who are forced to develop unique interfaces for each proprietary ILEC system rather than a single standardized interface. Id. ¶¶ 4-6.

For CLECs requiring ILEC unbundled network elements or resold retail services to provide local services, there is no substitute for the ILECs’ information on their own unbundled network elements and retail services. See Iowa Utils. Bd., 119 S. Ct. at 734 (noting that ILECs’ OSS “contains essential network information”). Access to that information can only occur through the ILECs’ own OSS. Quite simply, a competitor’s ability to provide service using either UNEs or resale is not just impaired, it is eliminated, without access to the ILEC’s OSS.

Sivori Decl., Tab 7 ¶ 7. ILECs must have appropriate OSS interfaces, back-end systems, and business processes in place and fully operational. Id. ¶¶ 9-30. They also must provide accurate and reliable documentation for their OSS so that CLECs can actually build and use the interfaces. In addition, ILECs must conduct comprehensive carrier-to-carrier testing of the interfaces before they are put into production, as well as adhere to reasonable change control procedures that maintain the reliability of the OSS interfaces while enhancing their capabilities. Finally, ILECs must provide adequate training to its employees and sufficient support for CLECs attempting to implement and use the interfaces. Overall, the ILECs' OSS must be operationally ready to support commercial volumes of traffic.

MCI WorldCom recommends that Rules cover the following:

- Operations Support Systems (OSS) consist of all the manual, computerized, and automated systems, together with associated business processes and the up-to-date data maintained in those systems, needed to pre-order, order, provision, maintain and repair, and bill retail or wholesale telecommunications services or unbundled network elements.
- ILECs must provide CLECs nondiscriminatory access to their OSS. In order to do so, ILECs must provide CLECs parity relative to their own access, for pre-ordering, ordering, provisioning, maintenance and repair, and billing across five dimensions: scope of information available, accuracy of information supplied, timeliness of communication, reliability of access, and uniform standards-based interfaces.
- ILEC OSS must meet performance standards that measures whether CLECs have access to these OSS on parity with the ILEC's access. Those performance standards must address quantitative measurements and qualitative measurements and must be applied to actual market situations. Failure to satisfy performance standards should automatically trigger a process to identify and correct the root cause of the problem.

G. Directory Assistance and Operator Services

Customers of basic local telecommunications service require access to operator services ("OS") and to complete and accurate directory assistance ("DA") regardless of their choice of service provider. If a customer does not have access to an operator or to directory assistance, if

the call operator is unable to complete a call, or if the DA operator is unable to provide a listed number or provides an incorrect telephone number, the customer will immediately know of the failure and will have an immediate negative impression of its service provider. Any provider who is unable to provide operator services and accurate and complete directory assistance therefore will be impaired in its ability to offer local service competitively. Declaration of Stuart Miller ("Miller Decl.") (attached hereto as Tab 8) ¶¶ 10-14.

To provide the necessary OS and DA services to its customers free of impairment by ILECs, three terms and conditions on access to OS and DA network elements are essential: ILECs must provide, at least for the time-being, access to their OS and DA platforms on an unbundled basis; ILECs must provide nondiscriminatory access to their DA data in bulk rather than by database dip; and, finally, ILECs must provide customized routing that enables CLECs to route their customers' calls to their own OS and DA platforms.

Because customers are so sensitive to OS and DA quality, MCI WorldCom prefers to provide these services itself, with minimal reliance on the ILEC, wherever it is feasible to do so. Three things often make this impossible in today's market. First, restrictions on access to the ILECs' DA databases have limited our ability to provide these services and have forced us to rely on the ILECs' rebranded services. Second, MCI WorldCom's inability (and the inability of all other CLECs but AT&T) to interconnect our OS/DA platforms with the ILECs' switching through customized routing often makes it impossible for us to use our own platforms, even when we have nondiscriminatory access to the ILECs' DA databases. And, finally, as with other network elements, CLECs must attain minimum threshold traffic levels for it to be economically feasible for them to provide their own operator and DA services. Id. ¶ 4.

1. **DA Databases.** A CLEC that has deployed its own switch can deploy its own DA platform to provide directory assistance to its customers served by that switch, but it can

provide the complete and accurate directory assistance its customers demand *only if* it has access to the ILECs' DA databases. CLECs will always need unbundled access to this critical data. Id. ¶ 6.

In particular, CLECs must have access to ILECs' DA data in bulk, as opposed to on a query-by-query basis, if they are to provide competitive directory assistance services. Id. ¶ 7. Many ILECs, including Bell Atlantic, SBC, and SNET, have attempted to provide DA data through a service that requires CLECs to query the ILEC database each time a customer requests a listing. That option is unacceptable for MCI WorldCom and many other CLECs. It would require the CLEC to develop or purchase a directory assistance system that is compatible with the ILEC system. Then, if an ILEC decided to change its system, the CLEC would again be forced to acquire a new system or upgrade its existing system. Id. ¶¶ 7-8. Moreover, any innovation on the part of the CLEC would be stifled: if the CLEC created new search strategies or services based on its existing directory assistance system, it would be held hostage to the ILEC performing the same development. If the CLEC were forced to share its plans for new services with the ILEC, any competitive advantage would be lost. For these reasons, it is essential that CLECs obtain unbundled access to ILECs' DA databases in bulk, not on a query-by-query basis.

Accurate and complete DA databases are not available from other sources. Other sources must rely on old ILEC white pages listings, which quickly become dated and error-riddled. Data from non-ILEC sources tend to have twice as many inaccuracies, as well as being far less complete. Id. ¶¶ 10-13. As a result, despite MCI WorldCom's strong preference for providing customers served on our own switches our own DA service, we have made the market-driven decision not to do so unless we have access to complete bulk ILEC DA data at cost-based rates.

2. **OS/DA Platforms**. Unbundled access to directory assistance databases is not enough to keep CLECs from being impaired in their ability to offer local service. MCI WorldCom would like to provide its own operator and directory assistance services in all situations, but technical limitations often make that impossible, even where it has adequate access to the databases. Therefore, CLECs also need access to the full ILEC OS/DA platforms. Id. ¶ 14-17.

When a CLEC provides local service using an ILEC switch, an operator or directory assistance call must be routed to the CLEC platform from the ILEC switch. Unfortunately, the ILECs do not provide customized routing using a protocol that CLEC networks (with the exception of AT&T's) are equipped to handle. Rather, the ILECs have insisted on using an outdated mass signaling protocol that is inconsistent with new technology. As a result, MCI WorldCom and other CLECs are forced to use the ILECs' operator and DA services despite the existence of their own OS/DA platforms.

It is extremely costly for a CLEC to modify its existing operator platform to accommodate an outdated customized routing protocol, and that expense is unnecessary when there is another protocol available that can meet the CLEC's needs and that already is being used to route traffic between the ILEC switch and other carriers. Id. ¶¶ 15-16. CLECs currently use the equal access Feature Group D ("FGD") signaling protocol to route long distance calls to IXC networks. Particularly for those CLECs that also have long distance networks, use of FGD to route the CLEC customers' OS and DA calls from the ILEC switch to the CLEC's OS/DA platforms would eliminate the large and unnecessary up-front costs associated with deploying a new customized operator platform.

With the use of FGD routing, MCI WorldCom could use its OS/DA platforms to provide these services to customers currently served by the ILEC switch. But the ILECs refuse to

program their switches to allow FGD routing to CLEC OS and DA platforms. Because of this, CLECs that are not using their own switch (other than AT&T) are unable to provide their own operator and directory assistance services. Id. ¶ 17.

Even if this customized routing issue is resolved, however, CLECs will need access to ILEC OS/DA platforms. For CLECs with very small market penetration, the unit costs of constructing their own OS/DA platforms and of transporting small levels of traffic back to these platforms will so far exceed those of an ILEC with large market penetration that, even if ILECs offered customized routing using a signaling protocol that the CLEC networks are equipped to handle, it would not be feasible for the CLEC to provide its own OS/DA services. In these cases as well, the CLECs' ability to provide local service would be impaired if they did not have access to the ILECs' platforms. Id. ¶ 18.

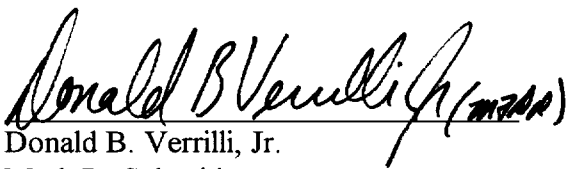
MCI WorldCom recommends that Rules cover the following:

- Each ILEC shall provide CLECs access to the bulk directory assistance database, updated as frequently as it updates the data it maintains for itself or provides to other ILECs, in a readily usable format.
- At least until ILECs can provide customized routing of operator and directory calls to the CLEC's platform with a signaling protocol usable by the CLEC, each ILEC shall provide CLECs unbundled access to operator services and directory assistance services and facilities where technically feasible.
- ILECs should be required to condition their networks to provide FGD signaling to CLECs so that CLECs can make use of their own OS/DA platforms.

CONCLUSION

For the reasons described above, MCI WorldCom respectfully requests that the Commission adopt the tentative conclusions endorsed by MCI WorldCom and further supplement its rules by adopting the additional requirements we request.

Respectfully submitted,

A handwritten signature in black ink, reading "Donald B. Verrilli, Jr." with a stylized flourish at the end.

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I, Jeffrey I. Ryen, hereby certify that I have this 26th day of May, 1999, caused a true copy of Comments of MCI WORLDCOM, Inc. to be served on the parties listed below by hand-delivery, except as noted below:

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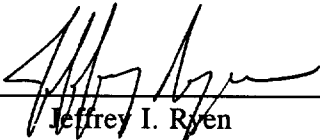
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